

**Issues Under 35 USC 103(a)**

Claims 9-19 stand rejected under 35 USC 103(a) as being unpatentable over Yasuyuki et al. EP 0 584 597 taken with Kondo et al. U.S. Patent No. 4,208,490, or Burlett et al., U.S. Patent No. 5,118,546, or Hayashi et al. U.S. Patent No. 4,528,340. Applicants respectfully traverse the rejections.

In support of the patentability of the presently claimed invention, Applicants have submitted herewith a **second** Declaration Under 37 CFR 1.132 by Mr. Miyamoto ("5/00 Miyamoto Declaration").

The present invention relates to: 1) the grafting at a high efficiency and/or 2) the epoxidizing at a high epoxidation ratio of rubber which has been modified by extracting the naturally occurring proteins.

As described by Mr. Miyamoto in the 5/00 Miyamoto Declaration, the skilled artisan would come to the reasonable conclusion that the presently claimed method is not made obvious by Yasuyuki et al. taken with Kondo et al., or Burlett et al., or Hayashi et al. since the combination of references fails to teach or suggest that graft copolymerizing or epoxidizing a deproteinized rubber polymer would be more efficient than graft copolymerizing or epoxidizing a natural rubber polymer. The artisan would also reasonably conclude that the increased efficiency is unexpected.

Assuming for the sake of argument that the skilled artisan would be motivated to modify the deproteinized polymer of Yasuyuki et al. by graft copolymerization as taught by Kondo et al. or by epoxidation as taught by either Burlett et al. or Hayashi et al, the skilled artisan would not reasonably conclude that the resulting efficiency of the grafting and epoxidation processes would differ when using natural rubber versus deproteinized rubber.

The skilled artisan would reasonably conclude that there would be little to no difference in the efficiency of the grafting and epoxidation processes when using natural rubber versus deproteinized rubber, since the naturally occurring proteins are not extracted from the rubber, *per se*, and are simply broken down to smaller units called polypeptides.

Yasuyuki et al teaches that the deproteinized rubber still contains the polypeptides formed during the deproteinization step (see line 34 of page 4 to line 9 of page 5). Therefore, the skilled artisan would reasonably conclude that there would be little or no improvement in the efficiency of the graft-copolymerization and/or epoxidation reactions using the deproteinized rubbers, since the polypeptides from the naturally occurring proteins are still present and would impede the graft-copolymerization and/or epoxidation reactions in the same manner as would the naturally occurring proteins.

The present invention relates to the improved efficiency of the graft-copolymerization and/or epoxidation reactions using the deproteinized rubbers versus natural rubber. Upon review of Tables 1-3 on pages 20, 22 and 25 of the specification, it is clear that as the protein content decreases, the graft ratio increases, i.e., the percent of the monomers which are grafted to the main chain backbone of the rubber polymer increases. Likewise, the epoxidation ratio increases as the protein content decreases, as shown in Table 2.

In Mr. Miyamoto's opinion, this improved efficiency of the graft-copolymerization and/or epoxidation reactions using the deproteinized rubbers is unexpectedly superior to the graft-copolymerization and/or epoxidation reactions using natural rubber, since: 1) the polypeptides of the naturally occurring proteins are still present in the deproteinized rubber of Yasuyuki et al; and 2) the combination of Yasuyuki et al., Kondo et al., and either Burlett et al. or Hayashi et al, fail to teach or suggest that there would be such an improved efficiency. Thus, the presently claimed epoxidized or graft copolymerized rubber is not made obvious by the combination of Yasuyuki et al., Kondo et al., and either Burlett et al. or Hayashi et al. As such, withdrawal of the rejection is respectfully requested.

**C nclusion**

In view of the above amendments and comments, Applicants respectfully submit that the application is in condition for allowance. A Notice to such effect is earnestly solicited.

Should the Examiner wish to discuss any issues concerning this application, he is requested to telephone the undersigned at (703) 205-8000 in the Washington, D.C. area.


Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of three (3) months to September 16, 1999 in which to file a reply to the Office Action. A check for the amount of \$870.00 is enclosed.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees

required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly,  
extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By 


John W. Bailey

Reg. No.: 32,881

P.O. Box 747

Falls Church, VA 22040-0747

(703) 205-8000

  
JWB/GMD:mar  
0649-0619P